

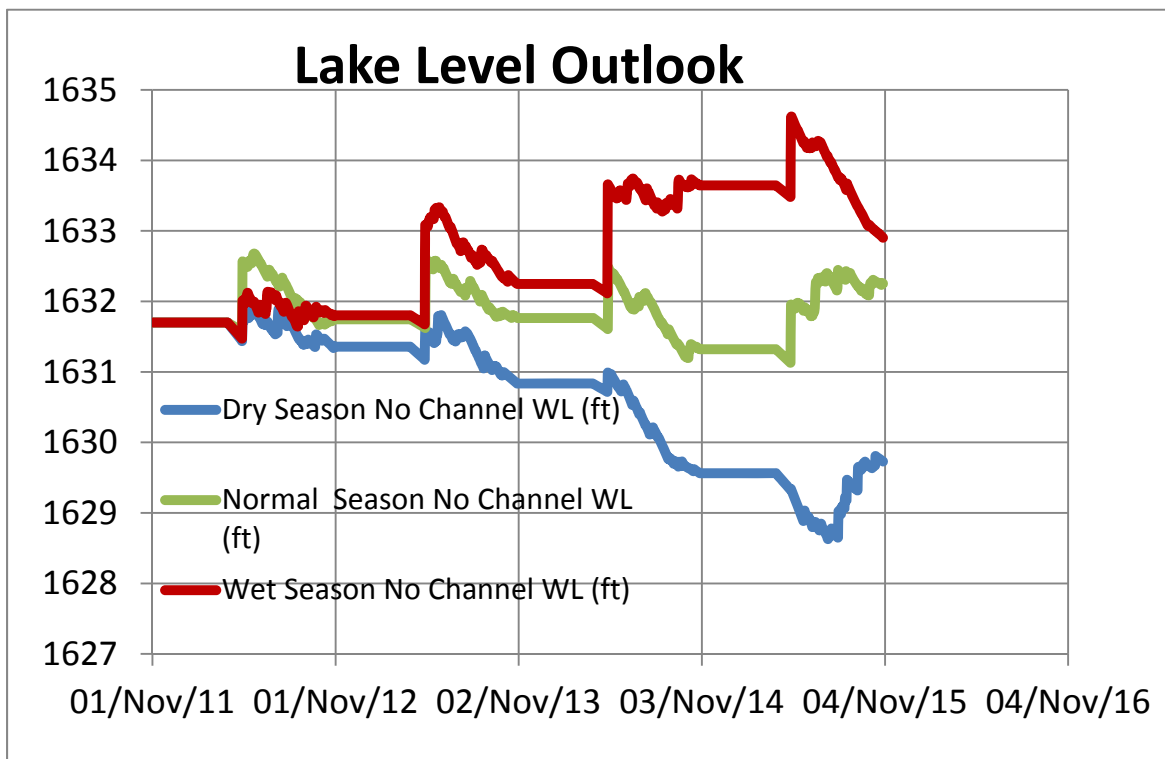
## Whitewater Lake Proposed Outlet

### What we know so far....

This information was summarized from a presentation conducted at the TMCD Board room on October 13, 2011 by Manitoba Water Stewardship. The presentation is available on the TMCD website [www.tmcd.com](http://www.tmcd.com)

#### Background

- Whitewater Lake watershed is a closed drainage system
- Main recharge to the lake comes from precipitation/runoff from the Turtle Mountain high lands
- Evaporation is the main cause of water loss
- Recharge or discharge from groundwater is minimum
- The lake level can change up to +/- 3.5 ft per year
- Impacted lands -1628 – 1631.7 = 12857 acres
- Deeded lands – 9413 acres, Crown lands 3444 acres
- Current level - 1631.7 ft (October 13, 2011)
- Average level - 1628 ft
- Historical peak level - 1632.76 ft (recorded on June 28, 2011)
- If highest historical inflow volume occurs in the spring and summer of 2012, the lake level could rise up to 1634.1 ft.
- Lake level was simulated to see the effect of four consecutive wet, dry and normal years at the current lake elevation.



## Historical Studies Summary

- **The 1971 PFRA Study:**
  - an outlet channel at intake elev. 1627 ft, through Medora Creek would cost \$290,000 (in 1971 dollar)
- **The 1976 Water Resources Branch Study:**
  - a 7 mile outlet channel at an intake elev. of 1627 ft with related channel improvements along Medora Creek would cost \$928,000 (1976 dollars) (\$5.27 million in 2011 dollars)
  - The benefit/cost ratio for this channel was 0.08
  - A 6.9 mile outlet channel at an intake elev. of 1627 ft along Elgin Creek would cost \$991,000 (1976 dollars).

## Medora Creek outlet (proposed by the RM of Morton)

- The length from the lake to Medora Creek of the outlet channel proposed is 1.1 miles.
- An additional 1.4 miles of Medora Creek needs to be upgraded/sloped for water to move (0.5ft/mile).
- The cost of building this channel, including crossings, a control structure and land acquisition is approximately \$292,000.
- The maximum flow of the outlet channel at an elevation of 1629 ft will be 1.42 m<sup>3</sup>/s (50 cfs)
- If the proposed outlet channel operates for the month of November - 2011, it would reduce the lake level by less than 2 inch. ***It has negligible effect on reducing the lake level for the spring of 2012.***
- Lake level was simulated to see the effect of the outlet channel in reducing the lake level for four consecutive wet, dry and normal years. It can be summarized that:
  - In no circumstances would the outlet channel reduce the lake level to mean level of 1625 ft.
  - In simulation of wet years, the outlet channel may reduce the risk of spill out to Medora Creek
- The outlet channel has small impact on the long term water balance of the lake.
- It can be estimated that Medora Creek could potentially carry the diverted flow of 1.4 m<sup>3</sup>/s from the lake, if it is operated on dry periods. This cannot be proved unless a detailed hydraulic study is conducted.
- The 1976 study suggested that Medora Creek must be upgraded to handle additional 100 cfs diverted from the Lake.
- Upgrading Medora Creek to handle additional 100 cfs would cost approximately \$2.48 million.
- The 1976 PFRA survey indicated that spill out to Medora Creek would occur at elevation 1632.87 ft.
- There is no data available on spillout elevation to Elgin Creek.
- Due to lack of sufficient data, it is difficult to estimate the amount of spill out flow to either Medora Creek or Elgin Creek.
- The chance of Deloraine being affected by overland flooding from the lake in the next spring is small.

## Alternative Solutions

- Upland storage with drainage prohibition/restraints
- Diking-community, farmsteads, Ag lands
- Buyout of impacted private lands
- High water financial assistance program – *provide link*
- Surface Water Management Plan – TMCD is currently undertaking

## Summary

- Impacted lands -1628 – 1631.7 = 12857 acres
- Deeded lands – 9413 acres, Crown lands 3444 acres
- Repeat of 2011 – WWL could go to 1634.1
- PFRA Medora Ck Option B 1627 outlet - \$5.27M, \$2.48M to upgrade Medora Ck.
- Proposed Medora Ck Option B 1629 outlet- \$292k – will lower lake less than 2”/month
- Medora Creek capacity- 12m<sup>3</sup>/s (420cfs)
- Elgin Creek Natural Spill 1634 feet
- Other Alternatives to consider possibly in combination